

Chen, attesting to facts regarding the conception and making of the invention claimed in the above-identified patent application (hereafter the "Stauf et al. Declaration").

REMARKS

Submission of Stauf et al. Declaration Under 37 CFR 1.131 Antedating Cited Ma et al. Reference, and Obviating Rejections of Pending Claims 1-39

The enclosed Stauf, et al. Declaration overcomes all rejections in the September 23, 2002 Office Action of the pending claims 1-39.

In the September 23, 2002 Office Action, claims 1-6, 9-18, 20, 23, 25-26 and 30-31 were rejected on §102(e) grounds over Ma et al. U.S. Publication 2002/0006674 filed December 19, 2000 and claiming the priority of U.S. provisional patent application no. 60/171,754 filed December 22, 1999, and claims 7-8, 19, 21-22, 24, 27-29 and 32-39 were rejected on §103(a) grounds over Ma et al. in view of Kulwicki et al. USP 5,617,290. Kulwicki et al. was cited for its disclosure¹ of perovskite BST or amorphous BST as a high dielectric constant material species.

These rejections of the pending claims are traversed, on the basis of the Stauf et al. Declaration submitted herewith.

The instant claimed invention as broadly set forth in claim 1 is:

1. A microelectronic structure comprising:

at least one layer of high dielectric material;

at least one conductive barrier layer in contact with the layer of high dielectric constant material, wherein such conductive barrier layer comprises at least one material selected from the group consisting of Pt, Ir, IrO₂, Ir₂O₃, binary metal nitrides, ternary metal nitrides, and compatible combinations, mixtures and alloys thereof;

at least one metal layer in contact with the conductive barrier layer, wherein said metal layer comprises metal or metal alloy including a material selected from the group consisting of Cu and Al.

¹ at column 4, line 60 of such reference

The enclosed Stauf et al. Declaration sets forth facts concerning Stauf et al.'s conception of the invention of the above broad claim 1 prior to the priority date (December 22, 1999) of the Ma et al. reference, and facts concerning the diligence of the applicants to the reduction to practice of the invention.

Based on the facts adduced in the Stauf et al. Declaration, evidencing conception of the claimed invention before the filing date of the provisional application from which Ma et al. claim priority, and continuing diligence to reduction to practice of the invention, Ma et al. is removed as a reference, under the provisions of 37 CFR §1.131.

The §102(e) rejection of claims 1-6, 9-18, 20, 23, 25-26 and 30-31 based on Ma et al. therefore is overcome, and applicants therefore respectfully request the Examiner to withdraw such rejection in favor of allowance of such claims.

Concerning the §103(a) rejection of claims 7-8, 19, 21-22, 24, 27-29 and 32-39 over Ma et al. in view of Kulwicki et al., Ma et al. has been removed as a prior art reference by the Stauf et al. Declaration, so that the rejection of such claims therefore is based solely on the secondary reference of Kulwicki et al.

Kulwicki et al. as noted above was cited solely for its disclosure of perovskite BST or amorphous BST as a high dielectric constant material species, and the Kulwicki et al. disclosure provides no derivative basis for applicants' claimed invention.

Kulwicki et al. describes BST capacitive structures in which the electrodes are Pt (see column 3, lines 64-65 and column 5, lines 8-9) or in which

"electrodes may be constructed of Pt, Pd, Rh, Au, Ir, RuO₂, TaSiN, TiSiN, or alloys of these" (column 6, lines 6-7 of Kulwicki et al.)

There is thus no teaching or suggestion of applicants' claimed invention as broadly set forth in claim 1, requiring, *inter alia*,

"at least one metal layer in contact with the conductive barrier layer, wherein said metal layer comprises metal or metal alloy including a material selected from the group consisting of Cu and Al." (instant claim 1, last paragraph)

Since Kulwicki et al. do not even contemplate the problem addressed by applicants in respect of the instant claimed invention (viz., the fact that electrodes comprising aluminum and/or copper are not strong enough to withstand the stress of chemical vapor deposition processes used to deposit high k metal oxide films - see, e.g., the disclosure in the background section of applicants' specification at page 4, line 15 to page 5, line 5), and contains no derivative basis for applicants' claimed invention, the §103(a) rejection fails with the removal of Ma et al. (as not being prior art).

Accordingly, the rejection of claims 7-8, 19, 21-22, 24, 27-29 and 32-39 is overcome, and applicants therefore respectfully request the Examiner to withdraw same, in favor of allowance of such claims.

Request for One (1) Month Extension of Time Under 37 CFR §1.136

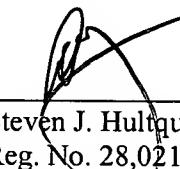
Request hereby is made under the provisions of 37 CFR §1.136 for a one (1) month extension of the term set for response in the September 23, 2002 Office Action, extending the deadline for reply from December 23, 2002 to January 23, 2003.

The fee of \$110 specified in 37 CFR §1.17(a)(1) for such one (1) month extension hereby is authorized to be charged to Deposit Account No. 08-3284 of Intellectual Property/Technology Law, together with any other fee or charge properly payable in connection with the entry of this response.

CONCLUSION

Claims 1-39 are in form and condition for allowance. Favorable action therefore is requested. If any issues remain outstanding, the Examiner is requested to contact the undersigned attorney at (919) 419-9350 to discuss their resolution, in order that this application may be passed to issue at an early date.

Respectfully submitted,



Steven J. Hultquist
Reg. No. 28,021
Attorney for Applicants

INTELLECTUAL PROPERTY/
TECHNOLOGY LAW
P.O. Box 14329
Research Triangle Park, NC 27709
Phone: (919) 419-9350
Fax: (919) 419-9354
Attorney File No.: 2771-497 (7486)